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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/808,219 | 03/24/2004 | Peter Hagemeyer | INFN/0060 | 3942 |
| 46798 | 7590 | 09/27/2005 | EXAMINER | |
| PATTERSON & SHERIDAN, LLP 3040 POST OAK BLVD., SUITE 1500 HOUSTON, TX 77056 | | | PHAM, LONG | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2814 | |

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-------------------------|--------------------------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/808,219 Long Pham | HAGEMEYER ET AL. Art Unit 2814 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
 - 4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3,7-9 and 13-15 is/are rejected.
- 7) Claim(s) 4-6 and 16-20 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>03/24/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 1-9 and 13-20 in the reply filed on 08/11/05 is acknowledged. The traversal is on the ground(s) that see the election of 08/11/05. This is not found persuasive because see the correct restriction below.

The requirement is still deemed proper and is therefore made FINAL.

2. Restriction to one of the following inventions is required under 35 U.S.C.

121:

- I. Claims 10-12, drawn to a method for operating or using a semiconductor device, classified in class 438, subclass 257 +.
- II. Claims 1-9 and 13-20, drawn to a semiconductor device, classified in class 257, subclass 288 +.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product as claimed can be used in a materially different process of using that product such as one in which both read and write programming are required.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshihide (JP 59154071).

With respect to claim 13, Yoshihide et al. teach a programmable read-only memory cell, comprising (see figs. 2(a)-2(h) and English abstract):

a floating gate 17 disposed in trench of as substrate 11;

a channel layer 20 formed over the floating gate, connecting a source electrode 29 to a drain electrode 29; and

a control or selection gate 23 disposed above the channel layer;

With respect to claim 14, Tsuruta et al. further teach a first insulator layer 18 between the floating gate and the channel layer and a second insulator layer 22 disposed between the control or selection gate and the channel layer.

With respect to claim 15, Tsuruta et al. further teach an insulator 15 between the floating gate and the substrate.

3. Claims 1, 2, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshihide (JP 59154071).

With respect to claim 1, Yoshihide et al. teach a programmable read-only memory cell, comprising (see figs. 2(a)-2(h) and English abstract):
a source electrode 29;

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a drain electrode 29;
a channel layer 20 formed between the source electrode and drain electrode;
a floating gate 17 isolated from the channel layer, and
a control or selection gate 23 isolation from the channel layer, wherein the
selection gate and the floating gate are arranged on opposite sides of the
channel layer, and wherein a first insulator layer 19 is arranged between the
floating gate and the channel layer and a second insulator layer 22 is
arranged between the control gate and the channel layer.

With respect to claim 2, Yoshihide et al. further teach the floating gate is
arranged at least partly in a trench of the substrate, the floating gate is
electrically insulated from the substrate, and the trench is located between
the source and drain electrodes.

With respect to claim 9, Yoshihide et al. further teach teh source and drain
electrodes are formed at least partly on a surface of a substrate.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for
all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as
set forth in section 102 of this title, if the differences between the subject matter sought to be
patented and the prior art are such that the subject matter as a whole would have been obvious
at the time the invention was made to a person having ordinary skill in the art to which said
subject matter pertains. Patentability shall not be negated by the manner in which the
invention was made.

5. Claims 3, 7, and 8 are rejected under 35 U.S.C. 103(a) as being
unpatentable over Yoshihide (JP 59154071).

With respect to claim 2, Yoshihide et al. teach the floating gate is insulated from the substrate by a thin insulator layer but fail to teach the insulator layer is made of oxide-nitride-oxide.

However, the use of oxide-nitride-oxide as insulator material is well-known.

With respect to claim 7, Yoshihide et al. fail to teach that the channel layer is made of epitaxial layer.

However, the use of epitaxial material as channel material is well-known.

With respect to claim 8, Yoshihide et al. fail to teach that the channel layer has n doping.

However, the doping of the channel with n type dopants is well-known.

Allowable Subject Matter

6. Claims 4-6 and 16-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on M-F, 7:30AM-3:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Pham
Primary Examiner
Art Unit 2814

LP